REMARKS

This response is a full and complete response to the non-final Office Action mailed July 18, 2005. In the Office Action, the Examiner notes that claims 1-20 are pending and rejected. By this response, Applicants have amended claims 1, 3, 8 and 13. Claims 2 and 18 have been canceled.

In view of both the amendments presented above and the following discussion, Applicants submit that none of the claims now pending in the application are indefinite, anticipated or obvious under the respective provisions of 35 U.S.C. §112, §102 and §103. Therefore, Applicants believe that this application is now in condition for allowance.

It is to be understood that Applicants, by amending the claims, do not acquiesce to the Examiner's characterizations of the art of record or to Applicants' subject matter recited in the pending claims. Further, Applicants are not acquiescing to the Examiner's statements as to the applicability of the art of record to the pending claims by filing the instant responsive amendment.

Rejections Under 35 U.S.C. §112

Claims 1, 7 and 13

The Examiner has rejected claims 1, 7 and 13 under 35 U.S.C. §112, ¶2, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner finds various limitations in the claims to be unclear. Applicants respectfully traverse the Examiner's rejections.

Claim 1 has been amended to define the relationship of the slop as "a sloping planar surface, relative to the first planar reflecting surface" and the limitation referring to "faces" have been deleted.

Claim 7 states that the surfaces made up of the plates of glass are separated by spacers. (See Fig. 4, 100 and 102). Air could be substituted for certain sections of the material. (See Specification, page 6, lines 19-21). Therefore, this claim clearly describes the situation where air and spacers are inbetween the plates.

Claim 13 states that the step is planar. Planar is an adjective describing that the step is not curved or some other shape. A planar step is describing the surface connecting the first and second edges. Partly semi-reflecting describes the situation where the surface includes fully reflecting portion and semi-reflecting portion. For clarity, the word "partly" has been deleted from the claim.

As such and for at least the reasons discussed above, Applicants submit that claims 1, 7 and 13 fully satisfy the requirements of the 35 U.S.C. §112 and are patentable thereunder. Therefore Applicants respectfully request that the rejection be withdrawn.

Rejections Under 35 U.S.C. §102

Claims 1, 2, 5, 6, and 13-15

The Examiner has rejected claims 1, 2, 5, 6, and 13-15 under 35 U.S.C. §102(e) as being anticipated by Rinaudo (US 6,323,987, hereinafter "Rinaudo"). Applicants respectfully traverse the rejection.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). The Rinaudo reference fails to disclose each and every element of the claimed invention, as arranged in the claim.

Applicants' claimed invention, as recited in independent claim 1 (and similarly independent claim 13) recites:

> A stepped etalon, comprising:
> a first planar reflecting surface;
> a second planar reflecting surface positioned parallel to and at a first distance from the first planar reflecting surface;
> a third planar reflecting surface positioned parallel to and at a second distance from the first planar reflecting surface, the second distance being greater than the first distance, the second planar reflecting surface having a first edge and the third planar reflecting surface having a second edge; and
> a step having a sloping planar surface, relative to the first

> planar reflecting surface, adjoining the first and second edges wherein the step is positioned such that a portion of a light passing through the first planar reflecting surface impinges on the sloping planar surface at an angle such that it passes through the sloping planar surface. (emphasis added).

The Rinaudo reference discloses a multi-wavelength etalon having a plurality of steps with a step size that is a fraction of channel separation and is substantially optimized so that a peak or through in the transmission curve in the region of one step overlaps a steep portion of the transmission curve for one or more other steps. (See abstract). Rinaudo also discloses that the transition between adjacent steps are not abrupt, and may be "softened" to reduce diffraction banding, fringing, and other optical effects caused by the presence of sharp transition regions. (See col. 6, lines 44-49).

Applicants' invention is different from the teachings of the Rinaudo reference since Applicants' invention is directed towards positioning the sloping step so that rays from a beam of light projected onto the top surface of the etalon strike the step at the Brewster angle and pass through the etalon without any light being reflected back. Since the Rinaudo reference fails to teach, or even suggest, "a step having a sloping planar surface, relative to the first planar reflecting surface, adjoining the first and second edges wherein the step is positioned such that a portion of a light passing through the first planar reflecting surface impinges on the sloping planar surface at an angle such that it passes through the sloping planar surface," the Rinaudo reference fails to teach each and every element of the claimed invention, as arranged in the claim.

As such, Applicants submit that independent claim 1 is not anticipated and fully satisfies the requirement of the 35 U.S.C. §102 and is patentable thereunder. Furthermore, independent claim 13 recites similar limitations as recited in independent claim 1. As such and for at least the same reasons discussed above, Applicants submit that independent claim 13 is also not anticipated and fully satisfy the requirements of the 35 U.S.C. §102 and is patentable thereunder. Moreover, claims 2, 5, 6, and 12-15 depend directly from independent claims 1 and 13 and

recite additional limitations thereof. As such and for at least the same reasons discussed above, Applicants submit that these dependent claims are also not anticipated and fully satisfy the requirements of the 35 U.S.C. §102 and are patentable thereunder. Therefore Applicants respectfully request that the rejection be withdrawn.

Claims 1-3, 5, 6, and 13-16

The Examiner has rejected claims 1, 3, 5, 6, and 13-16 under 35 U.S.C. §102(e) as being anticipated by O'Brien (US 6,500,512, hereinafter "O'Brien"). Applicants respectfully traverse the rejection.

The O'Brien reference fails to disclose each and every element of the claimed invention, as arranged in the claim.

The O'Brien reference discloses a stepped etalon in which the transition region between the lands of adjacent steps is no abrupt, but is "softened" to reduce diffraction banding, fringing, and other optical effects caused by the presence of sharp transition regions. In particular, O'Brien teaches that the smaller the angle the less abrupt the transition. (See col. 4, lines 20-25; lines 65-66). One such angle [of the transition region] is the *Brewster's angle for the etalon material* where the entire reflected ray is polarized. (See Col. 5, lines 17-21). O'Brien does not disclose, teach or suggest that the light impinging the sloped surface at the Brewster's angle.

Applicants' invention is different from the teachings of the O'Brien reference since Applicants' invention is directed towards positioning the sloping step so that rays from a beam of light projected onto the top surface of the etalon strike the step at the Brewster's angle and pass through the etalon without any light being reflected back. Since the O'Brien reference fails to teach, or even suggest, "a step having a sloping planar surface, relative to the first planar reflecting surface, adjoining the first and second edges wherein the step is positioned such that a portion of a light passing through the first planar reflecting surface impinges on the sloping planar surface at an angle such that it passes through the sloping planar surface," the O'Brien reference fails to teach each and every element of the claimed invention, as arranged in the claim.

As such, Applicants submit that independent claim 1 is not anticipated and fully satisfies the requirement of the 35 U.S.C. §102 and is patentable thereunder. Furthermore, independent claim 13 recites similar limitations as recited in independent claim 1. As such and for at least the same reasons discussed above, Applicants submit that independent claim 13 is also not anticipated and fully satisfy the requirements of the 35 U.S.C. §102 and is patentable thereunder. Moreover, claims 2-3, 5, 6 and 15-16 depend directly or indirectly from independent claims 1 and 13 and recite additional limitations thereof. As such and for at least the same reasons discussed above, Applicants submit that these dependent claims are also not anticipated and fully satisfy the requirements of the 35 U.S.C. §102 and are patentable thereunder. Therefore Applicants respectfully request that the rejection be withdrawn.

Rejections Under 35 U.S.C. §103

Claims 4, 7-12, and 17-20

The Examiner has rejected claims 4, 7-12, and 17-20 under 35 U.S.C. §103(a) as being obvious over O'Brien as applied to claims 1 and 13 above, further in view of Rinaudo. Applicants respectfully traverse the rejection.

The test under 35 U.S.C. §103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 USPQ 1021, 1024 (Fed. Cir. 1984) (emphasis added). Thus, it is impermissible to focus either on the "gist" or "core" of the invention, Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 230 USPQ 416, 420 (Fed. Cir. 1986) (emphasis added). Moreover, the invention as a whole is not restricted to the specific subject matter claimed, but also embraces its properties and the problem it solves. In re Wright, 6 USPQ 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added).

Applicants' independent claim 8 recites:

> An apparatus for measuring the frequency of light, comprising:
> a first planar reflecting surface;
> a second planar reflecting surface positioned parallel to and

at a first distance from the first planar reflecting surface;

a third planar reflecting surface positioned parallel to and at a second distance from the first planar reflecting surface, the second distance being less than the first distance, the second planar reflecting surface having a first edge and the third planar reflecting surface having a second edge, the first edge and the second edge facing one another;

a planar transparent member mounted between the first and second edges so as to form a step; and

a directing means for directing a collimated beam of a linearly polarized light wave onto the first planar reflecting surface, the electric component vector of the light wave impinges on the planar transparent member at the Brewster angle such that the light wave propagates through the planar transparent member without any light being reflected from the step back into the etalon and interfering with a frequency measurement.

For at least the reasons discussed above with respect to the Examiner's §102 rejection of claims 1 and 13, the O'Brien and Rinaudo references singly and in combination do not teach or suggest Applicants' invention as a whole.

As discussed above, the O'Brien reference merely discloses a stepped etalon in which the transition region between the lands of adjacent steps is no abrupt, but is "softened" to reduce diffraction banding, fringing, and other optical effects caused by the presence of sharp transition regions. In particular, O'Brien teaches that the smaller the angle the less abrupt the transition. (See col. 4, lines 20-25; lines 65-66). One such angle is the *Brewster's angle for the etalon material* where the entire reflected ray is polarized; not the Brewster's angle of the light on the step. (See Col. 5, lines 17-21). Nowhere in the O'Brien reference is there any teaching or suggestion of a directing means for directing a collimated beam of a linearly polarized light wave onto the first planar reflecting surface, the electric component vector of the light wave impinges on the planar transparent member at the Brewster angle such that the light wave propagates through the planar transparent member without any light being reflected from the step back into the etalon and interfering with a frequency measurement.

Furthermore, the Rinaudo reference fails to bridge a substantial gap as between the O'Brien reference and Applicants' invention. In particular, as discussed

above, the Rinaudo reference discloses a multi-wavelength etalon having a plurality of steps with a step size that is a fraction of channel separation and is substantially optimized so that a peak or through in the transmission curve in the region of one step overlaps a steep portion of the transmission curve for one or more other steps. (See abstract). Rinaudo also discloses that the transition between adjacent steps are not abrupt, and may be "softened" to reduce diffraction banding, fringing, and other optical effects caused by the presence of sharp transition regions. (See col. 6, lines 44-49). The Rinaudo reference fails to teach or suggest Applicants' a directing means for directing a collimated beam of a linearly polarized light wave onto the first planar reflecting surface, the electric component vector of the light wave impinges on the planar transparent member at the Brewster angle such that the light wave propagates through the planar transparent member without any light being reflected from the step back into the etalon and interfering with a frequency measurement.

Even if the two references could somehow be operably combined, the combination would merely disclose a stepped etalon having "Softened" steps. Since the combination of Rinaudo and O'Brien fails to teach or suggest "a directing means for directing a collimated beam of a linearly polarized light wave onto the first planar reflecting surface, the electric component vector of the light wave impinges on the planar transparent member at the Brewster angle such that the light wave propagates through the planar transparent member without any light being reflected from the step back into the etalon and interfering with a frequency measurement," the combined references fail to teach or suggest Applicants' invention as a whole.

As such, Applicants submit that independent claims 1 and 13 are not obvious and fully satisfy the requirements of the 35 U.S.C. §103 and are patentable thereunder. Furthermore, independent claim 8 recites similar limitations as recited in independent claims 1 and 13. As such and for at least the same reasons discussed above, Applicants submit that independent claim 8 is also not obvious and fully satisfies the requirements of the 35 U.S.C. §103 and is patentable thereunder. Moreover, claims 4, 7, 9-12, and 17-20 depend directly or indirectly from independent claims 1, 8, and 13 and recite additional limitations thereof. As such and for at least the same reasons discussed above, Applicants submit that these

dependent claims are also not obvious and fully satisfy the requirements of the 35 U.S.C. §103 and are patentable thereunder. Therefore Applicants respectfully request that the rejection be withdrawn.

Official Notices

The Examiner takes Official Notices in the Office Action. For example, see pages 5-6 of the present Office Action. Applicant hereby traverses each Official Notice. The Examiner alleges that apparatuses and/or methods recited in certain claims are well known in the art. However, the Applicant believes that these apparatuses and/or methods rejected by the Examiner using Official Notice may not be well know within the specific art of the present invention as recited in the pending claims. For example, the allegedly well known limitations of glass plates separated by air may not be well known to be used in combination with other limitations of the claims in which they are found or in claims from which they depend.

CONCLUSION

Thus, Applicants submit that the pending claims are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Jasper Kwoh or Mr. Eamon Wall both at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

E M Wall

Eamon J. Wall, Attorney
Reg. No. 39,414

PATTERSON & SHERIDAN, LLP
Attorneys at Law
595 Shrewsbury Avenue, Suite 100
Shrewsbury, NJ 07702